University of Mosul

جامعة الموصل

First Cycle – Bachelor's degree (B.Sc.) – Environmental Health Sciences

بكالوريـوس علوم بيئـة – صحة بيئية

كلية العلوم البيئية
قسم الصحة البيئية
((رسمي))

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1. Overview

This guide deals with the study subjects offered by the Environmental Health Program for the Bachelor of Science/Environmental Health degree The program offers (51) subjects, for example, with (6000) total student load hours and 240 total European units. The delivery of the study materials is based on the Bologna process.

2. Preliminary study materials for the Bologna Track

Course 1

Code	Course/Module Title	ECTS	Semester
ENV101	**General Biology**	8	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	4	93	107
Description			
1 -Identify biology and its branches and its importance for humans and the environment 2- Distinguish between different cell shapes and their diversity according to the type of organism. 3- Study the chemical nature of cell components. 4. Understand the difference between eukaryotic and prokaryotic organisms. 5- Study of the process of cell division and growth 6- Identify the mechanism of formation of reproductive structures in higher organisms. 7- Knowledge of the basics of classification and scientific nomenclature of eukaryotic organisms. 8. Distinguish between the people and families of the animal and plant kingdoms. 9- Clarifying the different feeding methods in animals and the process of energy production and metabolism. 10- Explain the nutritional metabolic activities of plants. 11. Study the nature of the relationship between the types of living organisms and their surrounding environment.			

Course 2

Code	Course/Module Title	ECTS	Semester
ENV102	**Analytical Chemistry**	**2**	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	5	**93**	**107**
Description			
Course Definition A. Knowledge and Understanding Identify the subject of analytical chemistry and its sections and how this science has developed to become one of the most important branches of chemistry and a fundamental pillar of its direct connection to modern scientific applications. B. Subject-specific skills B. Identify the basic concepts of analytical chemistry and how to benefit from them and link them to everyday phenomena. Providing the student with the necessary skill in employing the acquired knowledge to be a pillar in the process of understanding for the purpose of applying it in the practical aspect and communicating it correctly to the students. Providing the student with knowledge in the field of chemistry, where it is possible for the student to turn this knowledge into action when the situation requires a certain response to solve a problem.			

Course 3

Code	Course/Module Title	ECTS	Semester
ENV103	**Ecology**	**7**	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	**78**	**97**
Description			
1.Brief History 2. Ecology 3. Branches of Ecology 4- Ecosystem 5- Ecosystem Characteristics 6- Ecosystem Components 7- Biotic Components. 8. Consumers. 9- Physico-chemical environmental parameters. 10- Energy Flow in the Ecosystem			

Course 4

Code	Course/Module Title	ECTS	Semester
UOM104	**Democracy and Human Rights**	**2**	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2		33	17
Description			
1. Understanding what human rights and democracy 2. Identify the characteristics of human rights 3. Identify the historical stages of human rights 4. Identifying the Generations of Human Rights 5. Understanding International 6. Humanitarian Law and International 7. Human Rights Law 8. Recognition of Human Rights in Arab Constitutions 9. Understanding the concept of Shura and democracy 10. Identifying Democracy in the Modern and Contemporary Arab, Islamic Reality 11. Identify the Characteristics and Disadvantages of Direct Democracy 12. Identify the types of parliamentary systems 13. Recognizing Contemporary Classifications of Democracy			

Course 5

Code	Course/Module Title	ECTS	Semester
UOM103	**Computer Science 1**	**3**	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
1	2	**48**	**27**
Description			
1. Understanding the basics of how a computer works 2. Learn how you approach Windows 10 3. Create documents, spreadsheets, and presentations 4. Send an email, browse the web, and keep your data safe With clear explanations and step-by-step instructions, you will help the student understand the basics of computing			

Course (6)

Code	Course/Module Title	ECTS	Semester
UOM101	**Arabic Language**	**2**	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2		**33**	**17**
Description			
The use of grammar, written and oral grammar is the best use in the future. Identify the levels of the Arabic language system. Knowledge of grammar and methods of manipulation in Arabic. Clarifying the Historical Stages of Successive Stages of Arabic Literature. Applying the secrets and arts of rhetoric in understanding Qur'anic and positivist texts			

Course7

Code	Course/Module Title	ECTS	Semester
ENV107	**Human Cytology**	**7**	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	4	**93**	**82**
Description			
What is a cell and the components of a cell? The body's various defenses against damage that can affect the cellular system. Preserving the human body and staying away from all environmental influences that cause diseases. Know how cancer cells reproduce and how to prevent them. Raising the awareness of the individual about the dangerous pollutants that are harmful to the human body and how to avoid their dangers. .1			

Course8

Code	Course/Module Title	ECTS	Semester
ENV109	**Medical Physics**	**6**	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	4	**78**	**72**
Description			
1. Identify the principles and foundations of physics in general 2. Recognize the principles and foundations of medical physics in particular. 3. Knowledge of the main branches of medical physics. 4. Study of the Exact Scientific Concept of Catalytic Radiation 5. The most important applications of lasers in medical sciences 6. Identify the mechanisms of using these 7. indicators according to their degree of severity in useful applications. 8. Understanding the Applications of Physics in Health 9. Identify the most important devices in the field of environmental health.			

Course9

Code	Course/Module Title	ECTS	Semester
ENV110	**Environmental Health Science**	**5**	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	**63**	**62**
Description			
Introduction to Environmental Health (2) Environmental challenges(2) The Most Serious Global Environmental Challenges(2) Air pollution(2) Methods of eliminating and preventing air pollution German Water Pollution and Noise Pollution(2) Soil Contamination and Radioactive Pollution(2) Diseases caused by radiation(2) Genetic damage(2) Ways to prevent radiation damage(2) Light Pollution(2) Visual pollution(2) Climate change and global warming(2) Solutions to stop climate change and global warming(2)			

10 Course

Code	Course/Module Title	ECTS	Semester
ENV108	**Organic Chemistry**	**6**	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	4	**93**	**57**
Description			
1. Knowing the types of organic compounds based on the active and compensated group in the compound. **2.** Learn how to write molecular, synthetic, and stereo formulas for organic compounds. **3.** The student should master how to distinguish between aliphatic compounds such as alkanes, alkynes, and organisms. **4.** The student will know how to distinguish between cyclic and noncyclic compounds.			

Course11

Code	Course/Module Title	ECTS	Semester
ENV111	**Quality Control**	**1**	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	1	**33**	**17**
Description			
Material Covered Introduction to Quality Control - Concept, Objectives, and Importance of Quality Control Quality Concepts and Key Factors Affecting Quality Quality Assurance in Laboratories Quality Control Tools (Quality Control Charts) Simple Statistical Analysis of Quality Control Charts Modern Concepts of Standard Specifications in Quality Control Systems Introduction to Measuring International Systems: 1/ HACCP System Introduction to Measuring International Systems: 2/ ISO System The Basic Concept of Total Quality Management The Difference Between Quality Assurance and Quality Management Mid coarse exam The Seven Quality Tools Concept			

Case Study (A scientific visit to the Mosul Dam) Troubleshooting Based on Quality Assurance Results

Course12

Code	Course/Module Title	ECTS	Semester
UOM102	**English Language 1**	**2**	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2		**33**	**17**
Description			
Identify the main parts of speech in English. Explain English pronouns and how to use them. Illustrate English adjectives and adverbs. Explain English prepositions Discuss conversation skills and encouraging students to participate in a dialogue. Improve the pronunciation skills of students. Introduce the main functions of English grammar. Describe verb to be. Illustrate English present simple tense. Discuss regular and irregular verbs. Describe English past simple tense. Identify Negatives and Question words. Discuss present continuous tense. Explain requests and offers. Review types of sentences in English.			

Course 13

Code	Course/Module Title	ECTS	Semester
ENV201	**Microbiology**	**6**	3
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	**78**	**72**
Description			
The study of this course aims to introduce students to the groups of microorganisms and to know what microorganisms are, the nature of their cellular structure, their forms, classification, and different types. Study of its distribution of the environment and its activities in it and the possibility of harnessing it to serve human beings and its presence in it Knowledge of how to deal with microbiology in practice in different environments			

Course 14

Code	Course/Module Title	ECTS	Semester
ENV203	**Toxicology**	**5**	3
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	**63**	**62**
Description			
1- Definitions in Toxicology 2- Natural and Manufactured Sources of Toxins 3- The relationship between toxicology and other sciences. 4- The history of poisons through the ages. 5- Environmental toxicology. 6. Classification of toxins. 7- Methods of exposure to toxic substances. 8. Ways of entering toxic substances. 9- Ways of dealing with various toxic substances. 10- Ways of the effect of toxins on the body. 11- The locations of the accumulation of toxic substances in the body and the methods of excretion.			

Course 15

Code	Course/Module Title	ECTS	Semester
ENV204	**Biochemistry**	**6**	3
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	**78**	**72**
Description			
Identify the subject of life chemistry and its divisions and how this science has developed to become one of the most important branches of chemistry and a key pillar of its direct connection to modern scientific applications. B. Subject-specific skills Identify the basic concepts of biochemistry and how to benefit from it and link it to the health of the organism. Providing the student with the necessary skill in employing the acquired knowledge to be a pillar in the process of understanding for the purpose of applying it in the practical aspect and delivering it correctly to the students. Providing the student with knowledge in the field of biochemistry			

Course 16

Code	Course/Module Title	ECTS	Semester
ENV205	**Radiation and Human Health**	**5**	3
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	**63**	**62**

Description
1. Learn about the basics of radiophysics in general and its health uses in particular. 2. Give a general idea of the importance of studying radiophysics. 3. Study the basic branches of radiophysics in industry and medicine. 4. Learn about the sciences related to radiophysics. 5. Identify the most important applications and uses of radiophysics. 6. Identify the methods of applying the basics of proper handling of radiation effects 7. Providing real protection to humans from the effects of radioactive materials.

Course 17

Code	Course/Module Title	ECTS	Semester
ENV202	**Biostatistics**	**4**	3
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	**63.00**	**37**
Description			
Knowledge Development means developing the student's ability to recall what he has learned about the living cell, improving the level of comprehension (comprehension, the ability to interpret, predict and deduce, develop his applied abilities and give him the ability to analyze) and develop his ability to integrate ideas and information and thus his ability to judge the value of the learned material.			
Teaching the student communication skills and the use of modern technological tools such as the use of computers, the Internet, and scientific programs for preparing reports, tables, shapes, and presentations, and encouraging him to work together within a team and developing his abilities to make the best use of time			

Course18

Code	Course/Module Title	ECTS	Semester
UOM2050	**Crimes of the Baath regime in Iraq**	**2**	3
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2		**33**	**17**
Description			
The concept of crime and its divisions Types of International Crimes The crimes of the Baath Party according to the documentation of the Iraqi Supreme Criminal Court law in 2005. Psychological and social crimes and their effects, and the most prominent violations of the Baathist regime in Iraq. Mechanisms of Psychological Crimes Images of Human Rights Violations and Crimes of Power Resolutions on Political and Military Violations of the Baath Regime Prisons and detention places for the Baathist regime Environmental Crimes of the Baathist Regime War and Radioactive Contamination and Mine Explosion			

Destruction of cities and villages (scorched-earth policy) Mass Grave Crimes (Concept) Ten mass grave incidents committed by the Baathist regime Tenth of the chronological classification of mass graves in Iraq for the period 1963-2003.

Course19

Code	Course/Module Title	ECTS	Semester
UOM2012	**Arabic Language 2**	**2**	3
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2		**33**	**17**
Description			
1. The use of grammar, writing and oral grammar will be used optimally in the future. 2. Identify the levels of the Arabic language system. 3. Knowledge of grammar and methods of manipulation in Arabic. 4. Clarifying the successive historical stages of Arabic literature. 5. Applying the secrets and arts of rhetoric in understanding Qur'anic and positive texts.			

Course20

Code	Course/Module Title	ECTS	Semester
ENV207	**Physiology**	**5**	4
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	**33**	**62**
Description			
The student can learn about physiology in general and its relationship to the surrounding environment. The student uses theoretical concepts in applied reality. (Linking what he learns with the reality of life) Learn the skills required to be able to distinguish the types of tests related to each body organ Using illustrative means to convey information, including -1 Data Show Discussion style in the classroom Conducting seminars among students and highlighting their perspectives to encourage learning			

Course21

Code	Course/Module Title	ECTS	Semester
ENV208	**Medical Bacteriology**	**5**	4
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The study of this course aims to introduce students to the groups of pathogenic bacteria and the nature of their cellular structure, shapes, classification, and different types. Studying the diseases that cause these germs and their transmission and control. Learn how to handle these pathogenic microorganisms in the laboratory.			

Course22

Code	Course/Module Title	ECTS	Semester
ENV209	**Parasitology**	**5**	4
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
Introduction to Parasitology, its Departments, its Medical Importance and its Role in Public Health The science of parasitic protozoa, its divisions and its importance with the parasite Antimiba Importance of the parasites Giardia and Trichomons parasites Tripanosoma and Plasmodium parasites Toxoplasma parasite, leishmaniasis parasite and blastocestes parasite Veterinary Medical Insects and Their Importance - Mosquitoes and Ticks - Flies Introduction to cylindrical, tapeworm and perforation and recognition of the shape of the parasite Its life cycle and modes of transmission with its pathogens, symptoms and clinical signs. Methods of diagnosis and treatments. The importance of identifying lice, scabies and ticks and their role in the transmission of pathogens Methods of control and elimination			

Course 23

Code	Course/Module Title	ECTS	Semester
ENV210	**Environmental Chemistry**	**5**	4
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62

Description

1. Understanding the basic principles of environmental chemistry: By understanding the nature of the environment, studying the natural proportions of chemical concentrations, and knowing the impact of humans on this environment through the handling of chemical substances and pollutants, to protect the environment.

2. Diagnose chemicals and determine environmentally friendly ratios in various environments such as water, air, soil, and even the atmosphere.

3. Proposing logical solutions and treatment methods for managing pollutants and sustaining the environment.

Course 24

Code	Course/Module Title	ECTS	Semester
ENV211	**Immunology**	**5**	4
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	**63**	**62**

Description

1. The student uses theoretical concepts in applied reality.
2. Learn the skills required to make him able to distinguish and recognize the immune response around him and ways to deal with it in the field to protect humans and different organisms in the environment.
3. Using illustrative means to convey information, including :
1. Data Show
2. Discussion style in the classroom
3. Conducting seminars among students and highlighting their perspectives to encourage learning
4. Use of scientific films
5. Homework
6- Learn the skills of writing scientific research by arranging concepts, analyzing the obtained results, and discussing them according to the theoretical concepts studied during the course.

Course 25

Code	Course/Module Title	ECTS	Semester
UOM2022	**English language 2**	**2**	4
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2		33	17
Description			
Indicative content includes the following. Part A- Parts of speech: Introduction - Identify the main parts of speech in English. – Verbs (definition, types, and use of adjectives) – Adverbs (definition, types, and use of adverbs) – Prepositions (definition, types, and use of verbs) [14 hrs] Part B- Conversation skills: Encouraging students to express themselves in English – to talk about science using English – improvement of pronunciation skills [4 hrs] Revision problem classes [2 hrs] Part C- English grammar: Introduction - future tense -Negatives – Questions- Requests and offers –Types of sentences in English – academic writing – environmental terminology [22 hrs]			

Course 26

Code	Course/Module Title	ECTS	Semester
UOM2032	**Computer Science 2**	**3**	4
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
1	2	**48**	**27**
Description			
Security and Networking: What are Networking? Types of Networking Basic Network Components. Network security basics. Understand network threats. Network troubleshooting E-Commerce: E-banking concepts including Internet Banking: ATM & Debit Card Services, Phone Banking, SMS Banking, E-Alert, Mobile Banking E-Commerce: E-banking concepts including Internet Banking: ATM & Debit Card Services, Phone Banking, SMS Banking, E-Alert, Mobile Banking Computer troubleshooting: Identify and resolve common hardware and software problems faced by computer users. Troubleshooting techniques and tools. Computer troubleshooting: Identify and resolve common hardware and software problems faced by computer users. Troubleshooting techniques and tools. Introduction to Artificial Intelligence: Definition of Artificial Intelligence, History of Artificial Intelligence, Artificial Intelligence Techniques and Methods, and Ethical Challenges and Considerations. Artificial intelligence in our daily lives: Artificial intelligence in smartphones and virtual assistants like Siri or Google Assistant.) Artificial intelligence in our daily lives: Artificial intelligence in smartphones and virtual assistants like Siri or Google Assistant.) AI applications: education, healthcare, finance, transportation, marketing, and advertising.			

Artificial Intelligence and Society: (How Artificial Intelligence Affects Social and International Relations, Artificial Intelligence and the Future of Humanity) Ethical Challenges in Artificial Intelligence: (Ethics of Artificial Intelligence, Privacy and Surveillance, Impact of Artificial Intelligence on the Labor Market.

Course 27

Code	Course/Module Title	ECTS	Semester
ENV301	**Molecular Biology**	6	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	78	87
Description			
Molecular Biology introduces the fundamental molecular mechanisms underlying life processes, with emphasis on DNA, RNA, genes, protein synthesis, and regulation of gene expression. The course examines molecular techniques and their applications in detecting microorganisms, genetic alterations, and environmental health-related biological hazards. Students develop an understanding of how molecular interactions contribute to disease, environmental exposure, and biological responses. The subject also provides a foundation for applying molecular approaches in environmental monitoring, public health investigations, and the assessment of biological risks relevant to environmental health.			

Course 28

Code	Course/Module Title	ECTS	Semester
ENV302	**Nutrition**	**5**	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	**63**	**62**
Description			
Nutrition explores the relationship between food, nutrients, and human health, emphasizing the role of balanced nutrition in maintaining physical well-being and preventing disease. The course covers essential nutrients, dietary requirements, nutritional assessment, malnutrition, and common nutrition-related disorders. Particular attention is given to environmental and social factors that influence food safety, dietary habits, and nutritional status. Students gain knowledge			

applicable to community health, health promotion, and the prevention of nutrition-related problems, with consideration of environmental health practices and population needs.

Course 29

Code	Course/Module Title	ECTS	Semester
ENV303	Occupational Health & Safety	5	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
Occupational Health and Safety focuses on protecting workers from hazards and risks arising in different workplace environments. The course addresses physical, chemical, biological, ergonomic, and psychosocial hazards, together with methods of hazard identification, risk assessment, prevention, and control. Students examine occupational diseases, workplace injuries, personal protective equipment, emergency preparedness, and basic safety management practices. Emphasis is placed on the role of environmental health professionals in promoting safe working conditions, monitoring occupational exposures, and implementing preventive measures that reduce health risks and improve workplace safety.			

Course 30

Code	Course/Module Title	ECTS	Semester
ENV304	**Environmental Health Legislations**	4	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	1	48	52
Description			
Legal frameworks play a fundamental role in protecting environmental quality and promoting public health. This subject introduces students to environmental laws, regulations, standards, and the responsibilities of relevant authorities in managing environmental health issues. Topics include pollution prevention, waste disposal, water and air quality, food safety, occupational health, and environmental risk control. Students also explore compliance procedures and the practical application of legislation in identifying violations, reducing environmental hazards, and			

supporting effective regulatory practices for healthier and safer communities.

Course 31

Code	Course/Module Title	ECTS	Semester
ENV307	**Biodiversity**	5	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
Biodiversity addresses the variety of living organisms and the ecological systems in which they exist, highlighting their importance to environmental stability and human well-being. Students explore genetic, species, and ecosystem diversity, along with the factors responsible for biodiversity loss, habitat degradation, pollution, climate change, and invasive species. The subject also considers conservation strategies and sustainable resource use. Particular attention is given to the relationship between biodiversity and environmental health, including ecosystem services, emerging environmental risks, and the role of environmental health professionals in protecting biological resources.			

Course 32

Code	Course/Module Title	ECTS	Semester
ENV306	**Climate changes**	5	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
Understanding climate change is essential for recognizing its growing influence on environmental conditions and human health. This subject considers the causes and mechanisms of climate change, including greenhouse gas emissions, global warming, and changes in atmospheric and ecological systems. Students examine its effects on air and water quality, ecosystems, infectious diseases, food security, and population health. Emphasis is also placed on adaptation, mitigation, and sustainable environmental practices. The subject enables students to relate climate-related changes to environmental health risks and develop approaches for reducing their impacts on communities.			

Course 33

Code	Course/Module Title	ECTS	Semester
ENV308	**Air Quality & Pollution**	5	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
Poor air quality can result from natural processes as well as human activities, creating significant environmental and health concerns. This subject explores the composition of air, common atmospheric contaminants, and the primary sources of pollution associated with industrial activities, transportation, agriculture, and urban environments. Students consider how pollutants are dispersed and transformed in the atmosphere and examine their effects on human health and ecosystems. The subject also introduces air-quality assessment, pollution prevention, emission control, and practical approaches for reducing exposure and protecting environmental health.			

Course 34

Code	Course/Module Title	ECTS	Semester
ENV305	**Biotechnology**	5	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
Modern biotechnology provides valuable approaches for addressing environmental and public health challenges through the application of biological systems and processes. Students are introduced to fundamental biotechnological concepts, microorganisms, enzymes, genetic techniques, and their practical uses in environmental applications. The subject highlights the role of biotechnology in wastewater treatment, bioremediation, waste degradation, pollution monitoring, and the management of environmental contaminants. Attention is also given to biosafety and the potential environmental implications of biotechnological applications. Through these concepts, students develop a foundation for applying biological technologies to environmental health protection and sustainable management.			

Course 35

Code	Course/Module Title	ECTS	Semester
ENV309	**Food Safety**	5	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
Safe food handling is closely connected with the prevention of foodborne diseases and the protection of community health. The subject introduces students to biological, chemical, and physical hazards that may contaminate food throughout production, processing, storage, preparation, and distribution. Attention is given to foodborne pathogens, contamination routes, hygiene practices, food inspection, storage conditions, and preventive control measures. Students also gain an understanding of food safety standards and risk assessment, enabling them to recognize potential hazards and support effective practices for maintaining food quality and safeguarding public health.			

Course 36

Code	Course/Module Title	ECTS	Semester
ENV310	**Nanotechnology**	5	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			

Nanotechnology introduces the application of nanoscale science and engineering to environmental health, focusing on materials and processes with dimensions typically measured at the nanometer scale. The subject highlights the emerging role of nanotechnology in detecting, controlling, and treating environmental contaminants.

Key Topics:

- Fundamentals and properties of nanomaterials.
- Environmental applications of nanoparticles.
- Nanotechnology in water and wastewater treatment.
- Detection and removal of pollutants.
- Nanomaterials in air-pollution control.
- Environmental monitoring and sensing technologies.
- Potential health and environmental risks of nanoparticles.
- Principles of safe and sustainable nanotechnology applications.

Course 37

Code	Course/Module Title	ECTS	Semester
ENV311	**Epidemiology & Community Health**	5	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			

Population health is influenced by numerous environmental, social, and biological factors that determine the occurrence and spread of disease. Students examine methods for collecting and interpreting health data, identifying disease patterns, measuring risk, and investigating

outbreaks. The subject also addresses environmental exposures, vulnerable populations, disease prevention, and community-based health interventions. Emphasis is placed on applying epidemiological evidence to assess community health needs and support effective preventive strategies. These concepts enable students to recognize health risks at the population level and contribute to planning and evaluating environmental health programs.

Course 38

Code	Course/Module Title	ECTS	Semester
ENV312	**Heavy metal processing**	5	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The extraction, processing, and utilization of heavy metals can generate significant environmental contamination and occupational health concerns. Students explore the main stages of heavy metal processing, including extraction, separation, refining, and waste generation, with attention to the release and movement of metallic contaminants in environmental systems. The subject considers the behavior of metals such as lead, mercury, cadmium, and chromium, their pathways into air, water, and soil, and their potential effects on ecosystems and human health. Emphasis is placed on pollution control, waste treatment, exposure reduction, and environmentally responsible processing practices.			

Course 39

Code	Course/Module Title	ECTS	Semester
ENV401	**Mycology**	6	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	78	72
Description			

Fungi represent an important component of environmental ecosystems and can influence both ecological processes and human health. Students examine the classification, morphology, physiology, reproduction, and identification of medically and environmentally significant fungi. Attention is given to fungal infections, allergenic effects, mycotoxins, and the environmental conditions that support fungal growth and transmission. The subject also considers the occurrence of fungi in soil, water, food, and indoor environments, together with methods for detection, prevention, and control. Emphasis is placed on applying mycological knowledge to environmental health assessment and the management of fungal-related hazards.

Course 40

Code	Course/Module Title	ECTS	Semester
ENV402	**Solid & Hazardous Waste Management**	6	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	78
Description			
Effective waste management is essential for minimizing environmental contamination and protecting communities from potential health hazards. Students explore the generation, characterization, collection, transportation, treatment, recovery, and final disposal of solid and hazardous wastes. The subject addresses hazardous waste classification, toxicity, environmental pathways, occupational exposure, and associated health risks. Emphasis is placed on waste minimization, recycling, safe handling, containment, and appropriate treatment technologies. Students also develop an understanding of environmental regulations and management strategies that support sustainable waste practices and reduce risks to ecosystems and human populations.			

Course 41

Code	Course/Module Title	ECTS	Semester
ENV403	**Medical Virology**	6	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	78	72
Description			
Viral infections constitute an important challenge to public health, particularly because of their ability to spread rapidly within communities and across environmental settings. Students study the structure, classification, replication, transmission, and pathogenic mechanisms of medically important viruses. The subject covers common viral diseases, modes of transmission, host–virus interactions, laboratory diagnosis, prevention, and control measures. Particular attention is given to environmental and community factors that influence viral transmission, including sanitation, water quality, and exposure pathways. This knowledge supports the recognition and management of viral health risks within environmental health practice.			

Course 42

Code	Course/Module Title	ECTS	Semester
ENV404	**Professional ethics**	3	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	-----	33	42
Description			
Ethical conduct is a fundamental component of professional practice, particularly when environmental health decisions may directly affect individuals and communities. Students develop an understanding of professional responsibilities, ethical principles, integrity, confidentiality, accountability, and respect for human rights. The subject addresses ethical decision-making, conflicts of interest, professional relationships, and responsible communication in workplace settings. Attention is also given to the ethical dimensions of environmental health interventions, research, risk assessment, and public safety. The course prepares students to apply sound ethical judgment and maintain professional standards when addressing environmental and public health challenges.			

Course 43

Code	Course/Module Title	ECTS	Semester
ENV406	**Bioremediation**	5	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
Biological processes can provide effective and environmentally sustainable approaches for restoring sites contaminated by pollutants. Students explore the principles and mechanisms of bioremediation and the role of microorganisms, plants, and biological agents in degrading, transforming, or removing environmental contaminants. The subject considers applications in polluted soil, water, and industrial environments, including the treatment of hydrocarbons, pesticides, heavy metals, and other hazardous substances. Emphasis is placed on selecting suitable remediation strategies, evaluating their effectiveness, and understanding the environmental factors that influence biological treatment, with consideration of safety and sustainable environmental management.			

Course 44

Code	Course/Module Title	ECTS	Semester
ENV407	**Research Project**	6	8
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
------	4	63	87
Description			
Independent scientific investigation forms the core of this subject, allowing students to apply their academic knowledge to a selected environmental health problem. The project involves defining a research problem, developing objectives, reviewing relevant literature, selecting appropriate methodologies, collecting and analyzing data, and interpreting results. Students are encouraged to evaluate scientific evidence critically and relate their findings to practical environmental health issues. Particular emphasis is placed on research ethics, accurate documentation, scientific writing, and effective presentation of results, enabling students to demonstrate their ability to conduct a structured study and communicate evidence-based conclusions professionally.			

Course 45

Code	Course/Module Title	ECTS	Semester
ENV412	**Serology & Vaccines**	5	8
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	78	47
Description			
Immune responses provide essential mechanisms for identifying infectious agents and preventing the spread of communicable diseases. Students investigate antigen–antibody interactions, immune responses, serological reactions, and laboratory methods used to detect specific antibodies and antigens. The subject also covers the principles of vaccination, vaccine types, immune protection, immunization programs, and factors affecting vaccine effectiveness. Particular emphasis is given to the application of serological testing and vaccination in disease surveillance, prevention, and community health. Students gain practical scientific knowledge relevant to assessing infectious disease risks and supporting preventive measures within environmental health practice.			

Course 46

Code	Course/Module Title	ECTS	Semester
ENV409	**Sustainable management**	5	8
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	**63**	**62**
Description			
Balancing environmental protection, economic development, and social well-being is central to achieving sustainable development. Students examine principles and approaches for managing natural resources responsibly while minimizing environmental degradation and maintaining long-term ecological stability. The subject addresses sustainable resource use, waste reduction, pollution prevention, environmental planning, conservation, and the integration of sustainability into community and institutional practices. Attention is given to evaluating environmental impacts, improving resource efficiency, and developing practical management strategies. Students are encouraged to apply sustainability concepts to contemporary environmental health challenges and support decisions that promote resilient and healthier communities.			

Course 47

Code	Course/Module Title	ECTS	Semester
ENV410	**Transmissible Diseases**	5	8
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The spread of infectious diseases is influenced by interactions among pathogens, hosts, and environmental conditions. Students examine major transmissible diseases, their causative agents, modes of transmission, reservoirs, and factors that facilitate their occurrence and dissemination. The subject addresses environmental pathways involving water, food, air, vectors, and direct or indirect contact, alongside principles of disease surveillance, outbreak investigation, prevention, and control. Emphasis is placed on environmental health measures such as sanitation, hygiene, disinfection, vector control, and risk reduction. Students develop the ability to assess transmission risks and contribute to effective disease prevention within communities.			

Course 48

Code	Course/Module Title	ECTS	Semester
ENV408	**Water and Wastewater Treatment**	5	8
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
Safe water supply and effective wastewater management are fundamental to environmental protection and the prevention of water-related health problems. Students explore the physical, chemical, and biological processes used to improve water quality and treat domestic, industrial, and other wastewater streams. The subject considers treatment stages, pollutant removal, disinfection, sludge management, and the assessment of treatment efficiency. Attention is also directed toward water reuse, environmental discharge standards, and sustainable treatment practices. Students develop the ability to evaluate treatment systems and recognize their importance in reducing contamination and protecting aquatic ecosystems and community health.			

Course 49

Code	Course/Module Title	ECTS	Semester
ENV411	**Environmental medicine**	5	8
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	1	48	52
Description			
Environmental factors can significantly influence human health, disease patterns, and overall well-being. This subject examines the interactions between environmental exposures and human physiological responses, with attention to air and water pollution, chemical and biological hazards, radiation, climate-related factors, occupational exposures, and environmental toxins. Students explore the health effects associated with these factors, including acute and chronic conditions, vulnerable populations, and preventive approaches. Emphasis is placed on recognizing environmental determinants of disease and applying principles of exposure assessment, risk reduction, and prevention to support healthier living and working environments.			

3. Contact

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